AMENDMENTS TO THE CLAIMS

Please cancel claim 32 without prejudice or disclaimer.

1. (previously amended) A substrate having a surface area, the surface area comprising attached labeled probe molecules, said labeled probe molecules having therein incorporated nucleotide analogs that fluoresce and whose decrease in florescence, when substantially approaching zero, quantifies the presence or hybridization of complementary molecules to the labeled probe molecules by quenching a first florescence provided by the labeled probe molecules.

2-3. (cancelled)

4. (previously amended) The substrate of claim 1 wherein the labeled probe is comprised of native and nonnative nucleotides.

5. (previously amended) The labeled probe molecules of claim 1 wherein the nucleotides are nucleotide analogs including 2-amino purine for adenosine or guanine; ribonucleoside or 2,6-diamino ribonucleoside, formycin A, formycin B, oxyformycin B, toyocamycin, sangivamycin, pseudoouridine, showdomycin, minimycin, pyrazomycin, 5-amino-formycin A, 5-amino-formycin B or 5-oxo-formycin A for adenosine; 4-amino-pyrazolo [3,4d] pyrimidine, 4,6-diamino-pyrazolo [3,4d] pyrimidine, 4-oxo-pyrazolo [3,4d] pyrimidine; 4-oxo-6-amino-pyrazolo [3,4d] pyrimidine, 4,6-dioxo-pyrazolo [3,4d] pyrimidine, pyrazolo [3,4d] pyrimidine, 6-amino-pyrazolo [3,4d] pyrimidine or 6-oxo-pyrazolo [3,4d] pyrimidine for cytosine or thymidine.

6. (original) The labeled probe molecules of claim 2, wherein the nucleotide analog is 2-amino purine.

7. (original) The substrate of claim 1 wherein the labeled probe molecules are comprised of amino acids.

8-9. (cancelled)

10. (previously amended) The substrate of claim 1 wherein the substrate is a microarray further having the surface area divided into quadrants wherein each different quadrant has different labeled probe molecules.

11. (previously amended) The microarray substrate of claim 10 having from about 100 to about 10,000 different labeled probe molecules located upon about 100 to about 10,000 different quadrants.

12. (previously amended) The microarray of claim 10 having about 100 to about 1,000 labeled probe molecules per quadrant.

13. (previously amended) The substrate of claim 1 wherein the substrate is a bead, said bead sizes range from about 10 microns to about 20 microns.

14. (previously amended) The bead substrate of claim 13 wherein the bead is formed of a ferromagnetic metal core and a polymeric coating.

15. (previously amended) The bead substrate of claim 13 having from about 100 to about 1,000 labeled probe molecules attached to the surface area of the bead.

16. (previously amended) A method for assessing the presence of a target molecule in a cell or tissue sample comprising the steps of:

a. providing a microarray having a surface area comprising attached labeled probe molecules in quadrants, said labeled probe molecules including at least one nucleotide analog capable of fluorescence;

b. detecting fluorescence from said at least one nucleotide analog capable of fluorescence expressed within quadrants a first time;

c. applying a sample comprising unlabeled target sequences to the microarray;

d. providing a sufficient condition and time for target molecules to selectively pair with complementary labeled probe molecules;

e. detecting fluorescence from said at least one nucleotide analog capable of fluorescence expressed within quadrants a second time;

f. comparing the fluorescence expressed between the first time and the second time for each quadrant;

g. repeating steps c - f until levels of fluorescence decrease towards a level approaching zero and/or about background levels; and

h. the difference between fluorescence in that of step f and that of step c providing target/probe pair quantification.

17. (previously amended) A method for quantifying the amount of a target molecule in solution comprising the steps of:

a. providing a first substrate having a surface area comprising a known number of labeled probe molecules, said labeled probe molecules include at least one nucleotide analog capable of fluorescence;

b. detecting a first level of nucleotide analog fluorescence expressed by the labeled probe molecules on the first substrate;

c. contacting the first substrate with a volume of sample containing unlabeled target nucleotide sequences;

d. providing a sufficient condition and time for unlabeled target molecules to selectively pair with the labeled probe molecules;

e. removing the first substrate and detecting the level of nucleotide analog fluorescence expressed by said known number of labeled probe molecules after exposure to the sample containing unlabeled target molecules;

f. where the level of nucleotide analog fluorescence expression of the first substrate is substantially reduced to levels substantially similar to background levels, repeating steps a. through e. with subsequent substrates, having surface areas comprising known numbers of labeled probe molecules; and

g. calculating the amount of target molecule in the volume of sample by adding the known number of labeled probe molecules present on the first substrate and subsequent substrates contacted with the sample, wherein the levels of nucleotide analog fluorescence expression of the substrates are reduced to a level approaching zero relative to the levels prior to contacting the sample, whereby said amount of target molecule is quantified.

18. (previously amended) The method of claim 17, wherein the level of label expression is evaluated using a flow cytometer.

19. (cancelled)

20. (previously amended) A method for monitoring the hybridization of target and probe by complementation, comprising:

a. incorporating fluorescent nucleotide analogs into probes;

b. detecting a first level of fluorescence emanating from probes of step a;

d. hybridizing a target with said probes thereby forming a probe-target complex;

e. detecting a second level of fluorescence emanating from said probe-target complex after hybridization of probe and target;

f. comparing the first and second levels of fluorescence between that of step b and that of step e, and wherein said difference between second and first levels is less than said first level of step b;

g. washing of unhybridized target;

h. repeating steps d - g until the difference between the first and second levels of fluorescence approaches approximately zero and/or about background levels; and

i. quantifying the amount of target based upon said target's hybridization and subsequent quenching of said first level of fluorescence toward a level approaching zero.

21-22. (cancelled)

23. (previously amended) A method for monitoring the hybridization of a probe and a target comprising supplying a fluorescently labeled probe, said fluorescently labeled probe being fluorescent due to the incorporation of at least one nucleotide analog thereby providing a detectable first level of fluorescence, and providing a detectable second level of fluorescence when the labeled probe is hybridized to a complementary unlabeled target, wherein the second level is significantly lower than the first level and said second levels of fluorescence approach zero and/or about background levels.

24. (cancelled)

25. (previously amended) A method for monitoring the hybridization of a probe and a target comprising supplying a fluorescently labeled probe, said fluorescently labeled probe being fluorescent due to the incorporation of at least one nucleotide analog capable of fluorescence, thereby providing a detectable first level of fluorescence, and a detectable second level of fluorescence when the labeled probe is hybridized to a complementary unlabeled target, wherein the second level is approximately zero and the first level is greater than zero, and utilizing said reduction of fluorescence to approximately zero for quantifying said complementary unlabeled target.

26-28. (cancelled)

29. (previously amended) A substrate having a known and quantified plurality of probes, wherein said probes are fluorescently labeled by incorporation of at least one nucleotide analog, the labeled probe providing a detectable first level of fluorescence, and when hybridized to a complementary target having no nucleotide analogs incorporated therein, providing a second level of fluorescence, wherein the second level approaches zero, and wherein said known and quantified plurality of probes provides for quantification of said complementary target.

30. (cancelled)

31. (previously amended) A substrate having a surface area, the surface area comprising attached and quantified labeled probe molecules, said probe further comprising a fluorescent label, said fluorescent label including at least one nucleotide analog incorporated as part of a nucleotide sequence defining said labeled probe molecules.

32-33. (cancelled)

34. (previously amended) The method of claim 31 whereby the labeled probe molecules are nucleotide analogs including 2-amino purine for adenosine or guanine; ribonucleoside or 2,6-diamino ribonucleoside, formycin A, formycin B, oxyformycin B, toyocamycin, sangivamycin, pseudoouridine, showdomycin, minimycin, pyrazomycin, 5-amino-formycin A, 5-amino-formycin B or 5-oxo-formycin A for adenosine; 4-amino-pyrazolo [3,4d] pyrimidine, 4,6-diamino-pyrazolo [3,4d] pyrimidine, 4-amino-6-oxo-pyrazolo [3,4d] pyrimidine,

4-oxo-pyrazolo [3,4d] pyrimidine, 4-oxo-6-amino-pyrazolo [3,4d] pyrimidine, 4,6-dioxo-pyrazolo [3,4d] pyrimidine, pyrazolo [3,4d] pyrimidine, 6-amino-pyrazolo [3,4d] pyrimidine or 6-oxo-pyrazolo [3, 4d] pyrimidine for cytosine or thymidine

35. (previously amended) The substrate of claim 31 whereby the incorporated nucleotide analog is 2-aminopurine replacing adenosine or guanine nucleotides.

36. (cancelled)

37. (previously added) The method for quantifying the amount of a target molecule in solution comprising the steps of:

a. incorporating a nucleotide analog including 2-aminopurine into a probe;

b. affixing the labeled or modified probe on a substrate;

c. detecting a first level of label expressed by the labeled or modified probe molecules on the substrate;

d. contacting substrate with a volume of sample containing unlabeled or unmodified target molecules in solutions;

e. providing sufficient conditions and time for unlabeled or unmodified target molecules in solution to selectively pair and hybridize with the labeled probe molecules affixed on the substrate;

f. removing the substrate and detecting the second level of label expressed by the labeled probe affixed on the substrate after exposure to the unlabeled or unmodified target molecules in solution;

g. comparing the first and second levels of label expressed by the labeled or modified probe;

h. identifying probe and target hybridized molecules by repeating steps c-f until the amounts of label expression between the first and second levels of label approaches zero and/or about background levels.

38. (previously added) The substrate of claim 1 wherein the labeled probe fluoresces at a wavelength of about 300 nm to about 700 nm.

39. (previously amended) The substrate of claim 1 whereby the incorporated nucleotide analog is 2-aminopurine replacing at least one endemic adenosine or guanine nucleotide

40. (previously added) The method of claim 20 whereby after incorporation of the nucleotide analog including 2-aminopurine, the labeled probe is affixed on a solid substrate.